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Educating for Appropriate Design Practice: Insights from Design Innovation

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With design disciplines and territories expanding rapidly and design being positioned as a potential means of responding to grand global challenges, graduates of today are increasingly expected to work in dynamic and fluid ways; able to approach any wicked problem creatively. The authors of this paper contend that a design innovation approach is about developing agility and flexibility to be able to respond to any complex scenario where design could be employed or required.

Using an action research approach within a single case study, which draws upon a current PGT programme in design innovation, we propose that there is value in training students in 4 key areas: i) understanding a context before responding, ii) engendering empathy, iii) crafting appropriate research methods and iv) bringing form to the intangible complex. To illustrate how this is operationalized, the paper will draw on the experiences of a residential student trip, where design innovation Masters students worked with cohorts from two international schools.

We fully acknowledge that one learning experience, despite being shared by 3 three institutions doesn't mean that solid and scalable conclusions can be drawn, but we offer our insights to date for discussion, and to inform future learning activities and curriculum designs.

***Keywords**: Design education; pedagogy; learning; studio*

Introduction

With the on-going diversification of disciplines and programmes, postgraduate design education has become increasingly competitive and complex, which in turn, influences its pedagogy (Bremner and Rodgers, 2013). Some students – especially those paying a premium – may see personal or professional value in being "trained" in readily-identifiable, specific tools and approaches. This could previously have meant a specialism such as interior design or graphic design, but now, could extend to more contemporary offerings e.g., co-design, or service design. In attempting to communicate the dynamic and complex nature of design practice and wicked problems, we would then ask: what happens when the tools and approaches that students are learning, are purposely not labelled as a "toolkit" or a set of rules; and are neither clear nor formulaic? In the absence of this formulaic approach, how does one engender confidence in a dynamic, emergent curriculum? This is one of the characteristics of studio pedagogy in the authors' teaching. In this paper we discuss what it means to teach and study "design innovation", considering the following questions: What skills do students develop and to what extent can these be articulated? How are these dynamic and increasingly adaptable and valuable capabilities communicated alongside the slick and safe toolkits and step processes on offer?

While this paper will raise these questions, and discuss our findings to date, we do not aim to provide definitive answers at this stage. Rather, our questions are presented as provocations, which we intend to explore in future research through teaching, with a view to articulating our findings in future publications.

The Signature Pedagogies of Design and the Passport to Practice

Writing in the mid-2000s, American Academy fellow and president of the Carnegie Foundation for the Advancement of Teaching and Learning, Lee Shulman claimed that all major professions rely on 'characteristic forms of teaching and learning', which he refers to as 'signature pedagogies' (Shulman, 2005, p. 52). This notion has received some attention in recent design education literature (See for example Shreeve, Sims and Trowler 2010; Schrand and Eliason 2012). Shreeve (2015), pursuing this theme at length, defines the signature pedagogies of design as: the physical studio environment; the issuing of projects and briefs; materiality, dialogue, the evaluation mechanism of the 'crit'; and (possibly) the requirement to

undertake contextual research. Tovey and Bull, approaching the subject from the perspective of Lave and Wenger's communities of practice theory (Lave and Wenger 1991), take the view that such pedagogies allow students to develop a 'passport to practice' (Tovey and Bull 2010; Tovey 2015); specifically, a portfolio of work which will demonstrate their readiness to enter professional circles.

Within the authors' institution, the production of a portfolio of work, based on "live" studio projects is part of the character of design innovation PGT activity. However, we feel that within our particular pedagogic context the suggestion that signature pedagogies are ultimately aimed toward the development of a portfolio, which in turn acts as a "passport to practice", is worth exploring further.

A Passport to Practice Definition

Where relatively coherent communities of practice exist, the claim that the signature pedagogies of design ultimately aim towards a student being able to develop a portfolio-based passport to practice would seem perfectly reasonable. Tovey and Bull (2010) offer an extensive list of such communities, including "architects, industrial designers, design engineers, graphic designers, fashion designers, jewellery designers" alongside their own specific focus of "automotive designers" (Tovey and Bull 2010, p.2). Yet, as a number of contributors have highlighted over the last decade, design practice may be seen as currently undergoing a profound reconfiguration, resulting in an expanded understanding of the disciplinary remit and the role(s) of designers therein (e.g., Press and Cooper 2003; Sanders and Stappers 2008; Tan 2009; Inns 2010; Wilson and Zamberlan 2015). Strict delineation of sharp professional boundaries is no longer possible. Accordingly, the future that students in higher education are preparing for is far less certain than at any point in recent history (Barnett 2007).

Within this new landscape, it would seem that programme offerings in areas such as co-design and service design, with their own respective interdisciplinary approaches and toolkits, go some way toward compensating for the absence of specific disciplinary expectations. Design innovation however, sitting as it does between broad notions of transformation (Burns, Cottam, Vanstone, and Winhall 2006) and innovation as a creative and economic force (Cox 2005; Cruickshank 2010), lacks explicit toolkits or rules. Therefore, through our own delivery of design innovation

PGT activity, we aim to equip our students with the ability to operate in contexts that are not yet recognisable as practice settings. For example, our students are often asked to respond to futuristic and/or fictional scenarios such as "what if Scotland was independent?…" and "what would an alterative prison look like?". Here, pedagogy as a vehicle towards the development of portfolio-based passport to practice would appear redundant or, at least, only a partial aim. In taking this view, we propose that, in our teaching of design innovation, it may be more helpful to contextualise the signature pedagogies of design as the means through which students are schooled not only in *ways* of practicing, but also in ways of *defining* practice. We call this approach *education for appropriate practice*. We will now look at how it is pursued within our PGT delivery.

Practising Appropriate Practice: Four Characteristics of Design Innovation Education

Over the course of 2015 and 2016, a programme of small-scale action research activities were undertaken in the context of the delivery of our design innovation PGT programme. The dates of these activities, along with the particular learning experiences are set out below in Table 1.

Table 1 Action Research Activities Undertaken within Design Innovation PGT Delivery

Date of Action Research	**Learning Experience**	**Description of Learning Experience**	**Data Collection Methods**
June 2015	Research Methods Training Workshop	A short two-day workshop where students were encouraged to define a research strategy within a larger project.	Observation and reflection
September-December 2015	Design Theory Course	A thirteen-week course where students were introduced to a number of key themes within design theory, asked to define a personal theoretical approach and align this to their practice.	Student Evaluation Observation and reflection
January 2016	Winter School Residential Trip	A two-week residential trip where students were introduced a new project context and asked to respond by firstly, giving form to represent their initial learning and secondly, formulating a research question to take forward within a larger project.	Student Evaluation Observation and reflection

These activities were undertaken with a view to evaluating our delivery of specific learning experiences. At the time of writing, the authors have not yet completed analysis of the full dataset. However, by focusing on our evolving teaching approach and the observed student response, we are able to present an early articulation of what we believe are four key characteristics of design innovation education on our programme suite. These are: i) understanding a context before responding, ii) engendering empathy, iii) crafting appropriate research methods and iv) bringing form to the intangible complex. We will now explain these in turn.

Understanding a context before responding

In our view, understanding a context before responding is a distinctive, core skill in design innovation as appropriate practice. Where other kinds of consultants (e.g., a management consultancy) may take pride in quickly diagnosing a problem and knowing how to solve it, or "dip into their toolbox" for strategies that they've used before, those taking a design innovation approach, as we understand it, would act differently. Here, the practitioner must first negotiate an organisation's or stakeholder group's understanding of innovation, as well as their expectations regarding design. This will be different in every case, meaning, ultimately, that the response must be always aim towards appropriateness.

Designers in practice will frequently spend time reframing the brief, with each reframing being validated against their evolving understanding of the client's situation and needs. Often, for the designer, the measure of success in this process does not relate to how quickly they can "diagnose" but rather how *deeply* they can understand (Michlewski, 2015). We too contend that the deeper the understanding held by the designer, the more appropriate the eventual design response. As a result, throughout the duration of a project, our students are encouraged to place continuous emphasis on their efforts to attain understanding, as well as qualify the extent to which they feel that a deep understanding has been achieved.

Engendering empathy

Engendering empathy and understanding a context are closely related to one another. Approaches generally referred to as 'empathic design' (e.g., Koskinen, Batterbee and Mattelmäki 2003; Sanders and Dadavate 1999) are seen to contain a set of principles which can guide action in the early stages of the design process. Following an empathic approach, design practitioners are encouraged to move iteratively from wide-ranging objective material (e.g., statistics and reports) through to direct experiential contact with communities (Mattelmäki 2006, pp. 34-35). Here, the aim is to eventually arrive at a deep understanding of the 'felt life' (McCarthy and Wright 2004) of those who involved in the engagement process. On our programme, students are required to undertake extensive reading and perform a deep synthesis of their learning prior to establishing contact with potential participants and groups. The authors contend that this not only leads to better, more-informed decision-making, but also to the use of sensitive and respectful approaches when entering into communication with others.

Crafting appropriate research methods

In terms of crafting appropriate research methods, students are introduced both to conventional research-orientated approaches, as well as emerging design-orientated practices drawn from human centred design (e.g., Hanington 2003; Sanders 2008; Sanders, Brandt and Binder 2010). It is our experience that foregrounding mix-methods approaches (e.g., Creswell 2013, Teddlie and Tashakkori 2009) allows students to rapidly draw connections between these two perspectives. Specifically, the mixed methods proposal that research questions may drive the development of one's research strategy (Teddlie and Tashakkori 2009) is seen to align well with recent methodological discourse in practice-led design research (e.g., Bang, Krogh, Ludvigsen and Markussen 2012; Brandt and Binder 2007).

Bringing form to the intangible complex

The notion of bringing form to the intangible complex not only refers to visual modes of representation, but also includes narrative practices and storytelling as an art. Here, interim presentations to internal and external partners are positioned as performances in which students' work is presented as a context mapping (Visser, Stappers, Van der Lugt, and Sanders 2005) of their process of engagement and development. It is expected that these performances will be animated through students' careful revealing of the otherwise invisible structure of the project they've undertaken.

Figure 1 An example of our students providing an overview of their process. Source: Student work by Santoso, Goebel, Falco, Wu and Wu (2015)

Our Approach in Context

Over the past decade a number of contributors have proposed models of emerging and expected directions for design practice (e.g., Tan, 2009; Press and Cooper, 2003, p. 199; Han, 2010; Brown, 2008). As most give explicit consideration to education, it is worth offering a number of brief comments on how our characteristics may be seen to relate to and contrast with these profiles.

Perhaps most obviously, we see that an emphasis on understanding and empathy is foregrounded in Brown's design thinking (2008, p. 87). Similarly,

in positioning the designer as an active citizen Press and Cooper also recognise the designer's role as empathiser (2003, p. 199). Offering a more structured vision, Tan suggests that 'basic knowledge' of participant relationships and the organisational context is desirable (2010, p. 13). While these alignments are readily made, it is our feeling that none of the profiles place quite the same level of emphasis on this aspect of the design process as, for us, it is literally central.

With regard to crafting appropriate research methods, all profiles incorporate basic user research and Brown speaks of 'experientialism' as an informal design strategy (2008, p. 87). Yet, only Press and Cooper imply that more formal approaches to knowledge production might be applied. Here we feel that the level of emphasis placed on the development and refinement of research methods distinguishes our approach from the other profiles.

Finally, with regard to giving form the intangible complex, it is noted that all profiles acknowledge the importance of communication. Additionally, Han mentions the principle of 'making things tangible' (2009, p. 20). Closely resembling our own outline, Tan explicitly mentions visualisation and storytelling (2010, p. 13). However, these skills are couched in terms of facilitation rather than dealing with complexity. As with empathy and understanding, we maintain that our approach here may be seen as distinct on the basis of its centralisation of the act of making the intangible tangible, while other profiles appear to place this within a secondary category.

Having presented the above articulation and contextualisation, we will now move on to illustrate how this approach is operationalized by offering a reflection on a recent learning experience entitled Winter School.

A Design Innovation Learning Experience: Winter School

In January 2016, as a means of launching a twelve-week studio project, the authors' design innovation students were sent on a fortnight-long residential student trip in a remote location in Northern Scotland. Given the season, this trip was called "Winter School". Here, our students were joined by diverse cohorts drawn from two international partner institutions in Denmark and Germany. Both cohorts were both enrolled on co-design

programmes, which offer more clearly defined approaches and toolkits than our own.

There were two parts to the Winter School; firstly, *Understanding Island Life* and secondly *Design Appropriate Research Questions*. Each part lasted five days with an unstructured weekend in between. During Week One's *Understanding Island Life*, the students participated in an intense cycle of lectures, workshops and studio work. The lectures and workshops were delivered by a mixture of local and national experts who sought to provide students with an introduction to the project context, the Outer Hebrides—an archipelago off the northwest coast of the Scottish mainland. Within the studio sessions, students were divided into ten groups in which all institutions were represented. Each was then assigned a unique theme such as "History and Environment" or "Landscape and Culture". At the end of this week, all of the groups were asked to design an exhibition, which in some way gave expression to their initial insights. Tutors toured these exhibitions, listened to students' explanations and provided feedback.

Week Two was less intensive, with fewer lectures and more studio time. Working in the same groups, students were asked to develop a map of their findings and, subsequently, to design a research question, based on initial data, which they were then expected to take forward into a larger, more extensive studio project.

It is important to emphasise that Winter School was a first time experiment framed as an intensive starting phase of a term-long project, rather than a stand-alone part of the programme. Along with our pedagogy, we were also testing the infrastructure. As such, the Intended Learning Outcomes (ILOs) were kept relatively open and informal.

A Reflection on Winter School

During Winter School, teaching teams from each institution observed and reflected upon student engagement with the various elements of the structure and content of the two-week programme. Alongside this, students were asked to complete an evaluation of their experience. Here, feedback was sought in relation to what they enjoyed and what they thought could be improved, as well as any further items they wished to raise. As the ILOs were open and informal, the students were able to evaluate on the basis of their experience, as opposed to what they felt they "should have" learned.

As a general strategy, the teaching team reflected on Winter School iteratively. This reflection was, however, anchored around three focal points in the programme. First was at the end of each day during Winter School; second, at the end of the two-week Winter School period, and finally, at the beginning of the studio project when the students were back within their own studio space.

The teaching team synthesised their observations as below. We offer these here as emergent guiding principles, which we see as beginning to characterise the value of our teaching approach.

Design Innovation: An emerging professional identity

Although our students found it a little uncomfortable initially to see the other students with a more defined set of tools to apply, they spent more time questioning the brief and iterating. Over time, this tactic allowed them to develop appropriate approaches and methods relative to the project context. In contrast, the teaching team observed that a large portion of the students from other institutions made repeated attempts to apply tools and approaches inappropriate to immediate the project context. For example, many repeatedly requested access to residents of the Outer Hebrides, at points in time when access would not have been meaningful to the task at hand.

Such observations led us to the view that avoiding prescriptive approaches and involving external cohorts from more structured programmes, allowed our students to become more aware of their professional identify as design innovators in the Winter School experience. Having said this, when the students' evaluations were analysed, it was clear that, for some, this awareness remained emergent. In particular, it was noted that a number of students were still struggling with their identity and found the formal approaches of the other schools very attractive. We are open about this, and intend to explore the implications further in future activities to be undertaken at the end of the present academic year.

The benefit of an agile structure

Although the teaching team planned the overall aims, objectives, (informal) ILOs and daily activities of Winter School down to each half day session detail, our programme structure during Winter School provided a great deal of flexibility and allowed for emergent activity during the two weeks. This meant that we were able to add and adapt the core programmes iteratively and intuitively. Our agile approaches are outlined in the table below.

Table 2 Agile and traditional forms of teaching tools

Teaching Tools	**Agile Approach Used**	**Traditional Approach (not used at WS)**
Programme information	Easel displaying amends on mounting-board each morning to allow for emergent changes.	Printed material defined months in advance and sent to students before WS starts. This is inflexible and leads to confusion if amends are to be made on the day.
Timetable	Verbal orientation in the morning with the entire cohort and teaching team.	In the past this may have been omitted, as it was felt that this information was in the programme documentation already.
Studio Project time	Floating tutors, evening pizza.	Fixed with tutorials/ unstructured.

The teaching team became aware of the value of the agility of the programme structure, and identified opportunities to make this more explicit to students. For example, including sessions wherein the benefits of this structure are made clear. Here, by opening up the subject for discussion, it is envisaged that students might gain more confidence in learning in this way.

Home design innovation students were accomplished in dealing with uncertainty

When back in the studio and de-briefing on Winter School, many home students were able to recognise the value of responding to a complex project context without tools or approaches, i.e. being asked to formulate an appropriate approach to a unique set of circumstances. Although the non-prescriptive nature of design innovation as a core discipline remains an ongoing point of discussion, during the debrief, many students were able to understand this in contrast to their specialist part of their degree, e.g., service design – and to realise the benefit of both parts to their curriculum. It is our intention to explore this balancing of ambiguity alongside specificity in future work.

Conclusion

We have described how our approach to design innovation education aims not just at schooling students in ways of practicing but also ways of defining practice. In seeking to define practice, it is our view that students must work towards formulating appropriate responses to given project contexts without prescribed tools or approaches. We call this educating for appropriate practice; an approach that we believe relies on the embedding of four key characteristics. These are: i) understanding a context before responding, ii) engendering empathy, iii) crafting appropriate research methods and iv) bringing form to the intangible complex.

To illustrate how the above characteristics are embedded in practice, we offered a reflection on a recent residential trip undertaking with two external institutions. Here, we highlighted how, when working alongside students with more readily articulated identities (i.e. co-design), our cohort was seen to become aware of their emergent identity as design innovators. Further, the team teaching also recognised the value of maintaining an agile programme structure. Both of these observations led to the identification of a number of areas for future consideration. In particular, we recognise that attention still needs to be given to how we engender confidence in a dynamic, emergent curriculum, and how, alongside this, we can best communicate the value of cultivating an appropriate design practice, over the more rigid options of toolkits and step processes. From a programme design perspective, the former is more agile, and arguably timeless (we argue that the concept of an *appropriate* design practice cannot age whereas the latest 'buzzword' design trend inevitably will). Ultimately, we believe that this approach presents the most promising route for students preparing themselves to design in a world full of complex challenges and unknown scenarios.

While no broad ranging conclusions can be offered at this point, we suggest that the characteristics presented above might be applied as conceptual starting-points for other researchers aiming to undertake their own inquiry. Equally, we propose that conceiving of an 'appropriate design' practice has merits in and of itself; a belief that can only be tested by others exploring its value in alternative contexts.

References

Bang, A. L., Krogh, P., Ludvigsen, M., & Markussen, T. (2012). The role of hypothesis in constructive design research. The Art of Research: Making, Reflecting and Understanding, Helsinki.

Barnett, R. (2007). Will to learn: Being a Student in an Age of Uncertainty. Maidenhead: McGraw-Hill.

Bremner, C., & Rodgers, P. (2013). Design without discipline. Design Issues, 29(3), pp. 4-13.

Brandt, E., & Binder, T. (2007). Experimental design research: genealogy, intervention, argument. International Association of Societies of Design Research, Hong Kong.

Brown, T. (2008). Design thinking. Harvard business review, 86(6), pp. 84-92.

Burns, C., Cottam, H., Vanstone, C., & Winhall, J. (2006). RED paper 02: Transformation design. London: Design Council.

Creswell, J. W. (2013). Research design: Qualitative, quantitative, and mixed methods approaches. London: Sage.

Cruickshank, L. (2010). The innovation dimension: Designing in a broader context. Design Issues, 26(2), pp. 17-26.

Han, Q. (2010). Practices and Principles in Service Design: stakeholder, knowledge and Community of Service. Lulu.com.

Hanington, B. (2003). Methods in the making: A perspective on the state of human research in design. Design issues, 19(4), pp. 9-18.

Inns, T. (2010). Designing for the 21st century: interdisciplinary methods and findings (Vol. 2). Aldershot: Gower.

Koskinen, I., Battarbee, K., & Mattelmäki, T. (2003). Empathic design: User experience in product design. Helsinki: IT Press.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press.

Mattelmäki, T. (2006). Design Probes (Unpublished doctoral dissertation). Aalto University, Aalto.

Michlewski, K., (2015). Design Attitude. Aldershot: Gower.

McCarthy, J., & Wright, P. (2004). Technology as experience. interactions, 11(5), pp. 42-43.

Press, M., & Cooper, R. (2003). The design experience. Hants: Ashgate.

Sanders, E. B. N. (2008). ON MODELING An evolving map of design practice and design research. interactions, 15(6), pp. 13-17.

Sanders, E. B. N., & Dandavate, U. (1999). Design for Experiencing: New Tools. In First International Conference on Design and Emotion, TU Delft.

Sanders, E. B. N., Brandt, E., & Binder, T. (2010). A framework for organizing the tools and techniques of participatory design. In Proceedings of the 11th biennial participatory design conference, pp. 195-198. ACM.

Sanders, E. B. N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. Co-design, 4(1), pp. 5-18.

Santoso, A. A., Goebel, C., Falco, K., Wu, Y., and Wu, X., (2015) Genius Loci. Studio 1 Project, Glasgow: Glasgow School of Art.

Schrand, T., & Eliason, J. (2012). Feedback practices and signature pedagogies: what can the liberal arts learn from the design critique? Teaching in Higher Education, 17(1), pp. 51-62.

Shreeve, A., (2015) Signature pedagogies in design. In Tovey, M. M. (Ed.). (2015). Design Pedagogy: Developments in Art and Design Education, 83-92. Farnham: Ashgate.

Shreeve, A., Sims, E. and Trowler, P., 2010. 'A kind of exchange': learning from art and design teaching. Higher Education Research & Development, 29(2), pp. 125-138.

Shulman, L. S. (2005). Signature pedagogies in the professions. Daedalus, 134(3), pp. 52-59.

Tan, L. (2009). Seven ‘New’ Roles Designers Are Playing In Public Life. Design PhD Conference: Sustainability. Innovation And Design. Lancaster.

Teddlie, C., & Tashakkori, A. (Eds.). (2009). Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences. London: Sage.

Tovey, M. M., (Ed.). (2015). Design Pedagogy: Developments in Art and Design Education. Farnham: Ashgate.

Tovey, M. M., & Bull, K. (2010). Design education as a passport to professional practice. E&PDE 2010, the 12th International Conference on Engineering and Product Design Education. Trondheim, Norway.

Visser, F. S., Stappers, P. J., Van der Lugt, R., & Sanders, E. B. (2005). Contextmapping: experiences from practice. CoDesign, 1(2), pp. 119-149.

Wilson, S., & Zamberlan, L. (2015). Design for an Unknown Future: Amplified Roles for Collaboration, New Design Knowledge, and Creativity. Design Issues, 31(2), pp. 3-15.